

THE EFFECTS OF A KNOWLEDGE BASE ON THE LOGICAL REASONING OF STUDENTS IN THE FIRST-SEMESTER ORGANIC CHEMISTRY LECTURE

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While several studies have been conducted on the correlation between gains in students' individual reasoning ability and using web-based learning tools, this is the first investigation of the effect of use of an online knowledge base on students reasoning ability in organic chemistry. The IUPUI Chemistry Knowledge Base (chemkb.cs.iupui.edu) was developed to provide a supplemental problem-solving tool and information repository for organic chemistry lecture students. An initial Group Assessment of Logical Thinking (GALT) test was given to establish a baseline of students' reasoning ability and to form comparable group populations. The experimental group of students was encouraged to use the knowledge base and the control group of students was given no treatment. The GALT test was modified and re-administered to determine any potential gains in logical reasoning ability. Two content specific tools, a written quiz and a group solved workshop problem, were used to determine content oriented reasoning and problem-solving between experimental and control groups. Statistical analysis of correlations between initial logical reasoning ability, exposure to the knowledge base, and performance on the administered tools will be presented.

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This study was sponsored by the Indiana University Purdue University Indianapolis Multidisciplinary Undergraduate Research Institute (MURI)